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Building & Highway Material Testing Laboratory

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T-2377

Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/CEMENT/2015-16 Date: 06.02.2016

TEST REPORT ON CEMENT

* CUSTOMER	:	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
*AGENCY	:	**Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
*NAME OF THE WORK	:	Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	:	EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
SAMPLE ID	:	Cement
SAMPLE RECEIVED ON	:	04.02.2016
PERIOD OF TESTING	:	04.02.2016 to 06.02.2016

The results of the tests conducted on the cement sample are as follows:

Sl. No	Descriptions	Test Method as per IS	Test Result	Requirements as per IS: 8112-2013
1	Standard Consistency	IS-4031 (Part -4) 1988(RA-2009)	27.50 %	-
2	a) Initial Setting Time	IS-4031 (Part -5) 1988(RA-2009)	185 Minutes	Not Less than 30 Minutes
	b) Final Setting Time	IS-4031 (Part -5) 1988(RA-2009)	460 Minutes	Not More than 600 Minutes
3	Soundness by Le Chartlier Method	IS-4031 (Part-3) 1988(RA-2009)	1 mm	Not more than 10mm

*Information is furnished by the Customer/Representative.

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AE-5 n/a

Assistant Executive Engineer Byatarayanapura Sub Division B.B.M.P Bangalore

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/SAND-Gradation/2015-16 : 06.02.2016

TEST REPORT ON DETERMINATION GRADATION OF FINE AGGREGATES

* Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

* Agency : **Mr. A. Krishna Reddy,**
# 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.

* Name of Work : Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016

Technical Reference : IS : 2386 Part 1 - 1963 RA-2007

Sample ID : Fine Aggregates

Sample Received on : 04.02.2016

Date of Testing : 06.02.2016

Total Wt. of Aggregates in gms **1000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)			
		Zone-I	Zone-II	Zone-III	Zone-IV
10	100	100	100	100	100
4.75	94.11	90-100	90-100	90-100	95-100
2.36	76.85	60-95	75-100	85-100	95-100
1.18	57.98	30-70	55-90	75-100	90-100
600 Micron	36.75	15-34	35-59	60-79	80-100
300 Micron	15.21	5-20	8-30	12-40	15-50
150 Micron	4.59	0-10	0-10	0-10	0-15

* Information is furnished by the Customer/Representative

Remarks : This sample is under Zone-II specific limits.

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/AGG/GR/2015-16 : 06.02.2016

TEST REPORT ON COARSE AGGREGATES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
* Name of Work	: Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
Technical Reference	: IS : 2386 Part 1 -1963 RA-2007
Sample ID	: Coarse Aggregates (40mm)
Sample Received on	: 04.02.2016
Date of Testing	: 06.02.2016

Total Wt. of Aggregates in gms= **10000**

Is Sieve Size in mm	Cumulative Weight Passing in %	Spec.Limits as per IS 383-1970 (RA- 2007)	
		Graded	Single Sized
80	100	100	-
63	100	-	100
40	96.81	95-100	85-100
20	34.14	30-70	0-20
10	12.68	10-35	0-5
4.75	2.14	0-5	-

* Information is furnished by the Customer/Representative

Remarks : This sample is under Graded specific limits.

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Job No.: CTCE/BBMP/W.No.05/AKR/STEEL/2015-16 06.02.2016

TEST REPORT ON REINFORCEMENT STEEL

Customer	:	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	:	**Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
Name of the Work	:	Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	:	EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
Date of Test	:	06.02.2016
Technical Reference	:	IS: 1786-2008

Sl. No	Nominal size (dia) (mm)	Mass per metre (Kg/mtr)	TENSILE STRENGTH			Bend Test	Rebend Test
			0.20% proof stress/Yield stress N/mm^2	Tensile strength (Ultimate stress) N/mm^2	Elongation percent gauge length		
1	8	0.40	511	553	13.05	O.K	O.K

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/Bricks/2015-16 : 06.02.2016

TEST REPORT ON WATER ABSORPTION OF BRICKS

*Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*Agency : **Mr. A. Krishna Reddy,**
55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.

*Name of the work : Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016

Sample ID/Type of Test : Bricks / Water Absorption of Bricks

Technical Reference : IS: 3495(Part-2)- 1992 (RA-2007)

Sample Received on : 04.02.2016

Date of Testing : 06.02.2016

Sl.No.	Size of Bricks in mm	Dry weight in gms	Wet weight in gms	Water abosorption in %	Average Water absorption in %	Allowable Water absorbtion as per IS: 1077:1992 Clause 7.2)
1	220x100x70	3158	3418	8.23	7.74	Not exceeding 15%
2	220x100x70	3296	3452	4.73		
3	220x100x70	3215	3484	8.37		
4	220x100x70	3245	3526	8.66		
5	220x100x70	3289	3575	8.70		

* Information is furnished by the Customer/Representative

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/Bricks/2015-16 : 06.02.2016

TEST REPORT ON COMPRESSIVE STRENGTH OF BRICKS

*Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

*Agency : **Mr. A. Krishna Reddy,**
55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.

*Name of the work : Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016

Sample ID/Type of test : Bricks / Compressive Strength of Bricks

Technical Reference : IS: 3495(Part-1)- 1992 (RA-2007)

Sample Received on : 04.02.2016

Date of Testing : 06.02.2016

Sl.No.	Size of Bricks are in mm	Weight of Bricks in gms	Failure load in KN	Compressive Strength (N/mm^2)	Average Compressive Strength (N/mm^2)	Class Designation (As per IS: 1077:1992 Table 1)
1	220x100x70	3652.00	132.5	6.02	5.94	5.00
2	220x100x70	3668.00	130.7	5.94		
3	220x100x70	3719.00	129.8	5.90		
4	220x100x70	3725.00	131.4	5.97		
5	220x100x70	3758.00	128.6	5.85		

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Job No.: CTCE/BBMP/W.No.05/AKR/WMM/Gradation/2015-16 03.03.2016

GRADATION FOR WMM
MORTH TABLE-400-11

Customer : **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.

Agency : **Mr. A. Krishna Reddy,**
55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.

Name of Work : Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.

Reference : EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016

Date of Testing : 03.03.2016

Material : WMM

Sample Location : WMM Mix Plant Oven Dry Wt (gm): **7620**

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	235	235	3.1	96.9	95-100
22.4	2595	2830	37.1	62.9	60-80
11.2	1425	4255	55.8	44.2	40-60
4.75	835	5090	66.8	33.2	25-40
2.36	940	6030	79.1	20.9	15-30
0.600	590	6620	86.9	13.1	8-22
0.075	520	7140	93.7	6.3	0-8

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Job No.: CTCE/BBMP/W.No.05/AKR/WMM/AIV/2015-16 03.03.2016

Aggregate Impact Value

IS: 2386 Part IV

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
Name of the Work	Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
Source / Location	WMM Plant
Type of Mix	Wet Mix macadam
Date of Testing	03.03.2016

Sl No.	Details	Trial No. 1	Trial No. 2	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	384	386	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	84	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	300	299	
4	Aggregate Impact value = percent fines	21.88	22.54	
	100* (W_2/W_1)%			22.21

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.05/AKR/WMM/S-T/2015-16 03.03.2016

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Customer	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
Agency	**Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
Name of Work	Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Date of Testing	03.03.2016

Result : Flakiness Index = **11.56%**

Elongation Index = **13.24%**

Result : Combined Flakiness & Elongation index 24.80%

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/CUBE/2015-16 16.03.2016

TEST REPORT ON COMPRESSIVE STRENGTH OFCONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
* Name of the work	: Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
* Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 7^{th} day
Sample Received on	: 16.03.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	09.03.2016	16.03.2016	8.139	344.2	15.30
2	09.03.2016	16.03.2016	8.242	356.3	15.84
3	09.03.2016	16.03.2016	8.321	376.4	16.73

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Job No.: CTCE/BBMP/W.No.05/AKR/CSR-02/1063b/CUBE/2015-16 16.03.2016

TEST REPORT ON COMPRESSIVE STRENGTH OFCONCRETE CUBES

* Customer	: **Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
* Agency	: **Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
* Name of the work	: Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
Reference	: EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
* Sample ID	: Cement Concrete
Size of cubes	: 150mmx150mmx150mm
Cross Sectional Area	: 22500 mm^2
Technical Reference	: IS: 516-1959 (Reaffirmed 2008)
* Grade of Concrete	: M_{20}
Compressive Strength as on	: 7^{th} day
Sample Received on	: 16.03.2016

Sl.No.	* Date of casting	Date of testing	Weight of cube (Kg)	Failure load (KN)	Compressive strength (N/mm^2)
1	09.03.2016	16.03.2016	8.125	349.4	15.53
2	09.03.2016	16.03.2016	8.237	362.7	16.12
3	09.03.2016	16.03.2016	8.169	380.9	16.93

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Job No.: CTCE/BBMP/W.No.05/AKR/SDBC/Bitumen/2015-16 24.03.2016

BITUMEN CONTENT AND GRADATION DETERMINATION OF SEMI DENSE BITUMINOUS CONCRETE MIX

As per IS : 2386 and IRC : SP : 11 - 1984

CLIENT	**Asst. Executive Engineer,** Byatarayanapura Sub Division, BBMP, Bangalore.
AGENCY	**Mr. A. Krishna Reddy,** # 55, 12th Cross, Kodandarampura, Malleshwaram, Bangalore.
NAME OF THE WORK	Construction of Graveyard Burial Building at Jakkur Village in Ward No. 05, Byatarayanapura Sub Division, BBMP, Bangalore.
REFERENCE	EE/BT/BBMP/E-PMT/190/2015-16 Dated: 03.02.2016
SAMPLE I/D	Graveyard Burial Building at Jakkur Village in Ward No. 05
DATE OF TESTING	24.03.2016

BITUMEN CONTENT DETERMINATION

Description	Trail 1	Trail 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	474	475
3. Weight of Asphalt and Mineral matter Extracted, g	-	-
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g		
6. Weight of Bitumen Extracted, g. (corrected)	26	25.00
7. Bitumen content in %	5.20	5.00
8. Average	**5.10**	

GRADATION AFTER EXTRACTION

SIEVE SIZE	Trail 1				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	28.45	6.00	6.00	94.00	90-100
4.75	246.32	51.97	57.97	42.03	35-51
2.36	51.89	10.95	68.92	31.08	24-39
1.18	47.96	10.12	79.03	20.97	15-30
0.3	38.52	8.13	87.16	12.84	9-19
0.075	36.95	7.80	94.96	5.04	3-8

SIEVE SIZE	Trail 2				JOBMIX
mm	Weight Retained, gm	% Retained	%Cummulative Retained	% Passing	Gradation
13.2	0	0	0	100	100
9.5	28.87	5.77	5.77	94.23	90-100
4.75	247.89	49.58	55.35	44.65	35-51
2.36	87.52	17.50	72.86	27.14	24-39
1.18	48.96	9.79	82.65	17.35	15-30
0.3	27.13	5.43	88.07	11.93	9-19
0.075	38.15	7.63	95.70	4.30	3-8

Note:

- This test report should not be reproduced except in full, without written approval of the laboratory.
- The results indicated above are based on the tests carried out on the samples received in the laboratory.
- Any Query regarding the report must be reported within 30 days from the date of testing.

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